

Weekly Report

2017.08.07-2017.08.13

1. This Week

Wavelines

1. Revise the waveline system, including:

- Use k-means to cluster the buses in the power grid, the distance function is defined as:

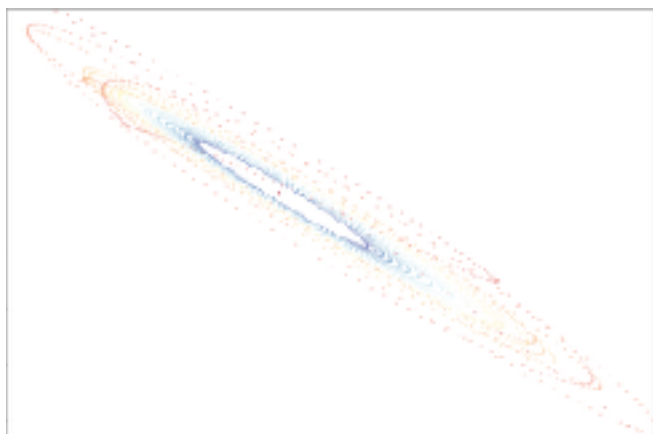
$$D = \sqrt{\sum f_i^2 + \sum v_i^2}$$

f, v stands for frequency and voltage respectively. Since there's only 8 bus has the rotor angle value, buses are clustered without R.A..

- Add the orthogonal layout for topological view and design a new glyph to encode two different variables for each bus. The glyph is designed as the picture below. Two circles represent two different variables and the time information is encoded around each circle. Bars on the circle encodes the values (the difference value rather than the normal value) of each variable. The negative value is flipped along the circle to the positive side and use another color to encode. Since there's limited pixel for each bus, we divide the time axis into 75 time window, with each window containing 40 time stamps. We compute the mean value for each time window and encode the 75 values around the circle. The number of the time window will increase when zooming in. (Zhang Wei is now helping design this glyph



- Use pca to project the 3000 time points into 2-dimensional canvas. Each point represent the power grid of different states at a certain time stamp. Interesting patterns are found like the picture below. After the electrical fault, the power grid becomes far away from the normal state and spins to gradually come closer back to the normal state. This is a stable example.



2. Revise the waveline paper, including: the abstract, introduction and data section.
3. Having a group meeting with the development team on Tuesday. We summarize the holiday work and assign new tasks for every one. Most of the tasks are revisions about designs and interactions in the system.

Others

1. Review the cad&cg paper.

2. TODO

1. Revise the waveline system.
2. Revise the system design section and case study section of the waveline paper.
3. Do for the passport thing and paper work thing of participating VIS.